

Two Technology Categories Set for Verification Testing

Verification testing will begin on two technology categories in April—ambient hydrogen sulfide (H_2S) analyzers and mercury continuous emission monitors (CEMs). Both technologies detect important hazardous pollutants in air.

The tests are being conducted by Battelle, which manages the U.S. EPA's Environmental Technology Verification (ETV) Program's Advanced Monitoring System (AMS) Center. The AMS Center conducts verification testing of monitoring technologies for contaminants and natural species in air, water, and soil. The technologies being tested are:

H_2S Analyzers—Hydrogen sulfide is produced naturally and by

human activities. Also known as sewer gas, H_2S has the characteristic odor of rotten eggs and, at high levels, can cause death from brief exposure. The need for improvement of methods for measuring and estimating H_2S and other emissions from animal feeding operations (AFOs) was identified in the National Academy of Sciences' 2003 report, titled "Air Emissions from Animal Feeding Operations."

Ambient hydrogen sulfide analyzers will be evaluated for determination of H_2S concentrations at a swine finishing farm during April and May. The test will be conducted by Battelle and two test collaborators: the U.S. Department of Agriculture and Applied Measurement Science, the

latter with funding from the American Petroleum Institute.

The two technologies that have been submitted for testing—Horiba Instruments, Inc.'s APSA-360 H_2S and Teledyne API's Model 101E—convert H_2S in air to sulfur dioxide, which is detected by ultra violet fluorescence.

Performance parameters tested will include accuracy, bias, precision, linearity, span and zero drift, response time, interference effects, comparability, data completeness, and operational factors, such as cost and ease of use.

The performance data collected during the test will be useful in evaluating and improving the quality of H_2S emissions measurements and may help ensure compliance of AFOs with

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Verification testing of ambient hydrogen sulfide (H_2S) analyzers will be conducted at a swine finishing farm (above). Swine barns on animal feeding operations (AFOs) may house more than 2,000 pigs. Hydrogen sulfide is formed during the bacterial decomposition of manure produced by livestock.

Mercury continuous emission monitors (CEMs) (below, left) will also be tested to evaluate their ability to determine mercury in the flue gas of a coal-fired power plant.



The AMS Center, which is part of the U.S. Environmental Protection Agency's Environmental Technology Verification Program, verifies the performance of technologies that monitor for contaminants and natural species in air, water, and soil. ETV was established to accelerate the implementation of improved environmental technologies through third-party verification testing and reporting of the technologies' performance. The ETV process provides purchasers and permittees with an independent assessment of the technology they are buying or permitting and facilitates multi-state acceptance. For further information, contact Helen Latham at Battelle, 505 King Ave., Columbus, Ohio 43201-2693; Phone 614-424-4062; Fax 614-424-5601; E-mail lathamh@battelle.org.



Hydrogen sulfide is produced from bacterial decomposition of sulfur-containing organic substances. Manure storage lagoons, such as the one shown above, are a source of H₂S at AFOs.

Categories *(from Page 1)*

the federal Clean Air Act; the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA); and the Environmental Planning and Community Right-To-Know Act. Several states, including Iowa, California, and North Carolina—have developed or are developing standards for ambient H₂S.

Mercury CEMs—Mercury CEMs are designed to determine total and/or chemically speciated vapor phase mercury in combustion source emissions. Total mercury is the sum of mercury in all chemical forms in the combustion gas, including elemental mercury (Hg⁰) and oxidized mercury vapors.

The verification test will evaluate the performance of the CEMs for determining mercury in the flue gas of a coal-fired power plant. Testing of two mercury CEMs submitted by Horiba Instruments will begin in April at the Ameren Energy Coffeen Power Plant in Coffeen, IL. Staff from the plant will assist in installing the CEMs, provide electrical and compressed air utilities, and oversee operations

of the two mercury CEMs during routine operation.

The CEMs undergoing testing will be located at ground level near the stack in a trailer provided by Battelle, and will sample combustion gas through specially designed sampling probes from ports at an elevated location on the stack. One of the CEMs uses a straight extractive design for gas sampling, while the other uses a dilution probe to cool and dry the sample gas by mixing it with high purity air.

The mercury CEMs will be evaluated for relative accuracy, measurement error, upscale drift, zero drift, data completeness, and operational factors such as ease of use, maintenance and data output needs, reliability, and operational costs.

Upcoming Events

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| April | |
| 10-12 | 2005 American Water Works Association (AWWA), Water Security Congress, Oklahoma City, OK. |
| 19-21 | 2005 Air & Waste Management Association Symposium on Air Quality Measurement Methods |

AMS, A&WMA Hold Session, Conference

The ETV program's AMS Center has arranged to conduct its next air stakeholder meeting in conjunction with the Air & Waste Management Association's (A&WMA) Air Quality Measurement Methods and Technology Conference, which will be held April 19-21 in San Francisco, CA.

A technical session on the ETV program and the AMS Center—Session 8—will be conducted on Wednesday, April 20, from 8:30 a.m. to 11:20 a.m. The session chair is Gretchen Hund of Battelle.

Topics will include: information about technologies verified to date and verification tests being planned; collaboration as the key to successful verifications; evaluation of technologies for ambient air monitoring at concentrated animal feeding operations; status and testing of dioxin continuous emission monitors (CEMs); and verification testing of mercury CEMs.

The AMS Center air stakeholder committee meeting will immediately follow the technical session.

and Technology. The ETV Program will conduct a session on April 20.

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| May | |
| 3-4 | EnviroExpo and Conference 2005, Boston, MA. |
| 16-18 | U.S. EPA Science Forum, Washington, D.C. |